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Structural and dynamic studies of naphtha crude residue with different chemical nature

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Abstract

It is known that the tars of heavy oils of naphthene-aromatic base with high concentrations of resin-asphaltene substances (RAS) and insufficient content of high-molecular paraffins are the most suitable raw material for production of a wide range of bituminous products in general and bituminous insulating material (BIM). Naphtha crude residues (NCR) of paraffin and high-paraffin crude oils are usually used due to limited oil production. It is notable that the production of refractory special bitumens at high-temperature oxidation of residual materials results in production of non-hydrocarbon compounds - carbenes and carboides that are insoluble in hot benzene, as well as the compounds of paraffin-naphthenic base containing in extracted oil. Considering the NCR as a thermodynamic system of phases A, B and C, it should be noted that the structure of carbon links of phases can be assumed by evaluation of molecular mobility and structural-dynamic parameters. Structural-dynamic states of NCR at different temperatures were studied using relaxometer NMR 08BK/RS and used as raw material for oxidation. © IDOSI Publications, 2013.

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Keywords

IR - spectroscopy, Naphtha crude residues, Nuclear magnetic resonance relaxation (NMR-relaxation), Oxidative polymerization, Paraffin-asphalt associates, Physical-chemical modification, Structurally complex links